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ABSTRACT

Vocational education plays a significant role in the nation's economic development in terms of its capacity to make individuals more employable. It can respond to specific regional needs by producing the skilled workers for a rapidly growing industry. If, however, the industries of a region do not utilize the skills of the existing labor force, it is possible for the region to try and attract the appropriate industries, rather than retrain the workers. While vocational education alone will not result in the economic development of a state, it has been shown that programs such as CETA do increase a state's capacity for economic growth. Because of the importance of vocational education's role, an effort should be made to coordinate it with national manpower policy, and to provide closer links with private employers and labor unions. Occupational projections are critical factors in determining needs for vocational education programs, and a number of models have been developed to determine and project manpower supply and demand. Since a well-trained work force can draw industries to a region, vocational education must develop more programs like RETONE (Relating Training to Occupational Needs) which not only assess employer needs but identify employment barriers. Vocational education, by improving training programs and by providing training to marginally productive workers, can affect the productivity level of the work force. (ELG)

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THE ROLE OF VOCATIONAL EDUCATION IN THE NATION'S ECONOMIC DEVELOPMENT

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FOREWORD

An important objective of economic development is increased employment. Vocational education has a significant role in the nation's economic development in terms of its capacity to make individuals more employable. Occupational training has been the main contribution of vocational education to increased employability, but such training must be coordinated with the actual needs of employers for skilled workers. One theme expressed in this paper is the importance of a close relationship between vocational education and industry in the promotion of economic growth through the development of a skilled work force. Another theme involves the importance of understanding regional economic development processes as they relate to labor supply and demand and vocational education's response to changing regional demands for skilled workers.

"The Role of Vocational Education in the Nation's Economic Development" is one of a series of 16 papers produced during the first year of the National Center's knowledge transformation program. The 16 papers are concentrated in the four theme areas emphasized under the National Center contract: special needs subpopulations, sex fairness, planning, and evaluation in vocational education. The review and synthesis of research in each topic area is intended to communicate knowledge and suggest applications. Papers should be of interest to all vocational educators, including administrators, researchers, federal agency personnel, and the National Center staff.

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INTRODUCTION

The basic purpose of this paper is to explore federal economic policy as it affects vocational education and to consider the response of vocational education to the national economic climate and national economic policy, particularly at the regional level.

A major theme of this paper is that improved coordination of economic development can take place in the short run through a better understanding of selected regional and local development processes. This understanding is necessary both for those who are concerned with training and those involved in employment.

Particular attention is given to the idea that key individuals and organizations in the private and public sectors must be involved in decision-making, planning, and implementation.

It is the authors' opinion that organizations prefer autonomy and interact with other organizations only when they will benefit from doing so. Therefore, involvement of organizations in economic planning depends on the recognition of mutual benefit to both the individuals and the institutions, i.e., the local, state, and national governments involved in the economic development process.

The complexity of economic development processes must be recognized at all levels, although the regional level is the focus of this paper. Within a given region, many organizations ranging from state economic development offices to local banks, utilities, and railroads are involved in economic development. When human and physical resources, capital formation, and leadership development are viewed against the sheer numbers and types of organizations, it becomes difficult to identify precise relationships; however, the authors attempt to separate and examine the elements in the process of economic development that can be acted upon by public and private vocational education decision-makers at the local, state, and national levels.

CONTEXT OF ECONOMIC DEVELOPMENT

Economic growth and development take place within the context of the market forces generated by the national economy. The interplay of these national market forces determines to a significant degree spatial distribution of industry and employment in the United States. In addition, social and demographic forces, as well as employment opportunities, shape the geographic distribution of population, the mix of educational systems and facilities, and the standard of living enjoyed by the citizens.

Through its fiscal and monetary policies, the federal government attempts to stimulate economic growth by influencing aggregate demand and prompting industrial and business activity. The primary tools of fiscal policy in a free economy are government expenditures and taxation. By increasing or decreasing government expenditures and/or taxes, governments can promote or constrain demand for goods and services thereby providing incentive for suppliers to increase or restrict their production activities. There is considerable disagreement among economists about the precise effects of government fiscal policy on cyclical expansion and contraction of business in free economies; however, governments do use fiscal measures to control inflation and abate recessions. In addition, many countries, especially those in Western Europe, have established policies for regional economic cooperation.

The United States has no comprehensive federal policy for regional economic development. A study by the Center for Political Research (1970) showed that only a few federal assistance programs are specifically designed to aid underdeveloped and poor parts of the country, and these have had only marginal effects on the pattern of national economic growth. The researchers state that:

> Even with substantial modification of priorities, fund levels and administrative processes, the capacity of these programs to alter--and particularly to reverse--geographic patterns of economic development is limited. (p.3)

A number of economists agree with this assessment (Hartley, 1977; Jusenius and Ledebur, 1977). According to Hartley, most of the effects of national economic policies on the relative growth of regions do not appear to be caused by deliberate federal action, "but rather they are the inadvertent, and even undesired, side effects of policies aimed at specific social, economic, or environmental problems" (p.1).

In recent years economists have been concerned about the effects of the lack of coordination of federal policies on the development of regions and states. This concern may not result in national policies like those in countries with more centralized economies, but may reflect a general interest in the impact of federal policies on regional economies.

The concern over the need for better coordination of federal economic policies was expressed in a recent White House conference on Balanced National Growth and Economic Development. The conferees recommended establishment of a national policy for economic growth with assistance from local and state governments (White House Conference, 1978).

The conference highlighted the conflicts and inconsistencies in federal laws and regulations which result in duplication, confusion, and wasted effort in relation to economic policies (White House Conference, 1978).

One of the chief recommendations of the conference was the establishment of an institution responsible for developing and coordinating national policy on economic growth.

State and Regional Development

While the national government exerts the most influence on overall growth, individual states have important roles in the quality and distribution of economic expansion. Important factors in economic expansion at the state level are the capacity and willingness of leaders to become involved in economic development. This involvement might include providing incentives for new and expanding industries, tax incentives, public improvement to accomodate development in key locations, and a well-developed education and vocational training program that provides a ready and willing labor force. To foster economic growth at the state level, the leadership must establish a climate in which there is a reasonable degree of confidence on the part of the private sector and the public-at-large in the fiscal stability and administrative capacity of the state (Massachusetts Office of State Planning, 1977).

A regional approach to economic development can promote comprehensive planning while dealing with issues at less than the national level. Frequently, the geographic boundaries of public issues and problems do not coincide with the political divisions of the government. For example, a natural disaster may strain the economic resources of several states without affecting the entire nation. As another example, a national energy crisis may create shortages and price increases in one region, while in another region development of additional energy resources creates a totally different set of problems (Wilson, 1977). Governor Michael Dukakis of Massachusetts, testifying before a Senate Subcommittee in March 1976, commented that:

> You can't really deal with the economic problems of (the New England states) unless you do so on a regional basis.... There is just no other way of dealing with the economic growth and development of that region without dealing with it on a multi-state basis. (U. S. Congress, 1976, p.65)

Despite the apparent advantages of dealing with economic policy at the state or regional level, it is important to note that state and regional economies are generally not self-sustaining. They must import many of the commodities needed to meet local consumption demand. Locally-earned income flows to producers outside the region to purchase these imports. Regions must also be exporters of goods and services to generate an inflow of nonlocal income. The economic or export base approach to regional economic development focuses on the export sector of the regional economy as the primary determinant of economic growth. Exports to other regions generate income which flows into the local economy.

The income is re-spent subsequently for local labor, resources, and commodities, creating new income, expenditures, and job opportunities through the multiplication of existing resources.

As is the case with the national economy, primary indicators of regional economic growth are income, employment, and production. Expenditures or demand flows can be categorized in the same manner as at the national level, i.e., households, businesses, and government. The aggregate of spending from the household, business, and local government sectors, along with demand for goods and services from other regions, are the income determinants of the regional economy. The expenditure determinants include imports by the private and public sectors of the regional economy and the accrual of private export sales of businesses and intergovernmental transfers to local governments. The net balance of income over expenditure represents the economic growth of the region.

The basic sector generates primary employment and income. Primary income in turn generates secondary or nonprimary employment and income by creating demand for supportive business and consumer goods and services. The greater the impact of primary income and employment in generating secondary income and employment, the more significant the effect of growth in the basic sector on regional development.

The regional development policies which follow from this emphasis on the export base include: (a) efforts to attract new, and expand existing, basic export industries, while (b) attempting to facilitate the process of import substitution in the region. Policies of this nature must operate within the following constraints (Ledebur, 1977):

1. Export-oriented industries can be attracted to a region only if that local economy has a comparative advantage in the production of a commodity.

2. The demand for a region's exports or potential exports will depend upon (a) the aggregate demand or national rate of growth and (b) the national demand for the specific export commodity. Neither of these factors can be influenced significantly at the regional level.

3. Many supportive business and consumer goods and services are independent of the resource base of the regional economy. Others, however, are dependent on a region's comparative advantage. Therefore, it is important to distinguish between those which can be produced locally and be competitive with imports, and those which the local region would be at a cost disadvantage in producing. (pp. 35-36)

The Supply of Labor as a Constraint on Growth

The labor supply concept of regional growth is essentially an effort to specify more clearly the relationships among capital, labor, and economic growth. In a rapidly growing regional economy, the supply of labor may be insufficient to meet increasing industrial demand. When labor supply is insufficient to meet industrial demand, it becomes a constraint on the expansion of the local economy. This situation is characterized by unfilled employment opportunities and rising regional wage rates. The problem can be viewed as either: (a) an inadequate supply of labor, or (b) an excess demand for labor resulting from a rapid rate of regional growth.

The definition of the problem points to the choice of response. To address the problem of an inadequate supply of labor, alternatives must be considered for increasing the supply with the required occupational skills.

A regional economy may have spurts of economic growth which outstrip the capacity of the local economy to supply needed factor inputs. This situation is characterized by shortages of a range of resources and increases in factor prices. Supply "frictions" of this type usually will be short-term. In the long run, rising factor prices will attract resources from outside the region and stimulate local suppliers (Ledebur, 1977).

Rapid regional growth, with significant in-migration of population and business enterprises, may also generate a variety of social or external costs such as congestion, socially inefficient land use, rising consumer prices, and the outstripping of the capacity of public services and infrastructure. These social costs will diminish the nonmonetary quality of life experienced by residents of a region. Where rapid regional growth is accomplished by significant external cost, it may be more appropriate to define the rate of growth as the primary problem rather than constraints on factor supplies. In this case, alternatives for moderating regional economic growth should be assessed. Rising wage rates are a consequence of the labor demand-supply imbalance and are an important market adjustment mechanism. To identify short-term wage movements as the problem and intervene in the market adjustment process may result in reinforcing or embedding the imbalance in the economy.

The educational system, on the other hand, affects the supply of labor by altering the occupational mix or the economic character of the region. According to Rodgers (1976):

> The educational system, especially the vocational education system, has the potential for increasing the labor supply by helping people to adapt to new technologies and by replacing obsolete skills with new and needed skills....It is a resource for building and maintaining and restoring human knowledge and skills--human capital--as the means for helping economic development and increasing productivity of workers in the region. (pp. 16-17)

In the conference on Balanced National Growth and Economic Development, the need for vocational education was emphasized. Participants commented on the need to upgrade the educational system, particularly in the urban and rural poverty areas, in order to prepare students to meet the increased demands of regional economic development. This concern for change in the educational system was expressed by Hortense Dixon, Vice-President of Texas Southern University, when she stated that:

> Education and training are essential to the development of a competent labor force that is capable of adjusting to changing economic and social forces. The educational system of America must undergo marked change to respond to the future needs of the economy. (White House Conference, 1978, pp. 14-15)

Matching Demand with Available Labor

Some regional economies have an adequate rate of economic growth and can generate a sufficient number of jobs to absorb the available labor pool. These economies still may have a serious mismatch between the potential occupational supply configuration and the occupational requirements of the industrial growth sectors. In other words, there is not a good fit between the occupational skills of the regional labor force and those required in existing and potential job opportunities. This situation has been the primary focus of regional manpower policies.

The problem can be viewed in two ways. It can be a problem involving the fact that regional industries generate the wrong jobs to provide the necessary employment opportunities to meet the needs of the regional labor force. Or, it can be a problem arising from the fact that the regional labor force and new additions to the labor force possess the wrong occupational skills to meet the qualitative labor requirements of industries within the region.

Traditionally, regional manpower policies have been designed and implemented with the assumption that there is an inappropriate configuration of skills within the labor force. Therefore, manpower programs have been designed to alter and upgrade the skills of present and future labor force participants to meet the present and projected occupational skill needs of the industry. These programs have revolved around vocational education and other training institutions.

If, on the other hand, the problem was identified as one in which regional industries were generating the wrong employment configuration, policy alternatives could be designed to influence the local industrial mix so that future employment opportunities more closely matched existing labor skills.

This might be done by directing regional or state development efforts to attracting new industries which would utilize these skills.

The ability of a region to affect the mix of its industries to match available labor skills is somewhat limited. In most areas where mismatches occur, it is because many labor force members are essentially unskilled or their skills are obsolete or inappropriate to technologies of progressive industries. Industries are attracted to regions on the basis of their comparative advantages. The most effective means for regions to alter or enhance their comparative advantage is by upgrading the local labor force.

Regional mismatch situations compound the potential for confusing causes and consequences. Wage levels will rise in occupations for which the local labor supply is inadequate to meet the demand and fall in those occupations for which there is insufficient demand to absorb the existing supply. Attempts to intervene in these wage movements, which are important market adjustment mechanisms, create long-term economic problems. These wage movements are essentially market adjustments indicating that (a) labor with skills in increasing-wage occupations should flow into the regional economy either through in-migration from other regions or through entrance of new skilled labor within the region; and that (b) labor in declining-wage occupations should flow out of the region either through out-migration or retraining. Regional employment and training policies which facilitate, rather than hinder these movements, will be most productive in the long run.

IMPLICATIONS OF ECONOMIC DEVELOPMENT FOR VOCATIONAL EDUCATION

A major purpose of vocational education is to assist individuals in acquiring and developing skills transferable to jobs in the local market place. Early support for vocational education was geared to specific occupations which were in demand by employers. The assumption was that vocational education benefited both the individual and society by supplying skilled workers to employers. The scope of vocational education has since been enlarged to include, as Law and Greenwood (1977) put it, "such social and political topics as (1) the development of vocational education policy, (2) equality of opportunity, (3) distribution of income, (4) social compensation, (5) work satisfaction, (6) national defense, and (7) productivity and commercial leadership" (p. 87). To these could be added such social goals as "developing abilities, attitudes, work habits, and appreciations which contribute to a satisfying and productive life" (Rhodes, 1969, p. 44). Whether economic development implies a narrow definition of vocational education or a broad interpretation depends on the current focus of economic policy aimed at increasing employment, personal income, and equitable distribution of income among people and regions. It is within this realm of economic activity that implications for vocational education are discussed in this paper. Other factors, such as "social compensations" and "attitudes", are not considered here.

A belief in the important role of work in determining the individual's status and his/her share in the distribution of income is an important aspect of the American character. Furthermore, according to Swanson (1978, p. 89), the critical element of this distribution system is the occupational structure, and its most important determinant is its precursor, the training system. Most economists agree that increases in the amount of capital and labor alone cannot explain all of the growth in output. Education and training, by improving the stock of human resources, play a significant role in economic growth and development. Denison (1964) has stated that education contributes to economic growth in two ways:

> First, it may raise the quality of the labor force, defined to include all occupations from the highest to the lowest.... Second, an upgrading of the educational background of the population may accelerate the rate at which society's stock of knowledge itself advances. (p. 22)

Despite the lack of detailed empirical evidence, some economists hold the view that the occupational job structure is sensitive to changes in the supply of trained or trainable workers. For example, Wachter (1974) has maintained that the supply of trained workers would likely influence the volume of "good jobs" forthcoming from employers. This finding is partially borne out by the examples of recent industrial activity in the southern states. Many firms that have recently located in the south cite the availability of a highly skilled labor force as one of the major factors influencing their decision. Other economists argue that the structure of jobs is quite independent of the educational and training characteristics of the labor force (Thurow, 1975).

It could be argued that vocational education or training alone will not result in the economic development of a state or a region. There is some evidence, however, that capital and labor both move in the same direction. This means that, with some exceptions, regions with high returns to labor also have high returns to capital in the short run. Such a situation implies a greater role for vocational education and other training programs in regional and state economic development. With financial aid and other incentives provided by the federal government, significant progress has been made in improving the infrastructure and economic development in the states. The present focus seems to be on the use of vocational education and programs carried out under provisions of the Comprehensive Employment and Training Act (CETA) as vehicles for the development of human resources. Vocational education is being called upon to align its objectives with state and local economic development plans and to gear training programs to local needs. This means that vocational education must develop a certain amount of flexibility in program offerings. Some states have already achieved a certain degree of flexibility in their program offerings based on employer needs. The trend is likely to continue. The need for closer collaboration between vocational education and other employment and training programs is increasingly evident.

Federal programs which are not specifically aimed at economic development but affect the prosperity of states also have implications for vocational education. For example, since the enactment of the Employment Act of 1946, the federal government has been committed to using fiscal and monetary policies to pursue a number of economic goals for the country as a whole. These goals include low unemployment, a high rate of growth, and stable prices (Graham, 1976). The policies most commonly used by the federal government include tax credits and rate adjustments, public works and public employment programs, and a variety of monetary policies.

A recent example of the use of such policies by the federal government was the announcement in 1977 of a $20.4 billion recovery program, including $4 billion for local public works, an expansion of CETA by 346,000 positions, and $11.4 billion for tax credits (Carter, 1977). Since the objective of these federal programs is to lower unemployment, promote economic growth, and regulate inflation, they have subtle implications for vocational education. For example, CETA programs involve training of both in-school and out-of-school youth and adults. Similarly, public works programs increase the demand for trained labor and, thus, the need for training and retraining programs. These programs also help improve the infrastructure, buildings, roads, utilities, and public administration in a region or state. These improvements contribute to economic development in a region or state. In addition, billions of dollars are allocated by the federal government each year to programs which have a bearing on economic development. These programs involve improvements of community facilities, housing, transportation, employment and training, and planning assistance, among others. Although these programs often are not coordinated, they should have implications for vocational education because they increase the capacity of the states for economic growth.

Manpower Policy and Vocational Education

Manpower policy has serious implications for the effects of vocational education on the economy. Manpower did not exist as a separate policy concern until the post-World War II era, and it did not attain wide recognition until the early 1960s. Since then it has emerged as a major area of national concern. According to a study of manpower programs by the National Academy of Sciences (1975), manpower policy is characterized by a concern for people in relation to work:

> Manpower policy blends social and economic objectives: to provide opportunities for self-support and fulfillment through employment and to enhance economic performance through increased labor productivity and mobility. It shares several elements with other policies, especially those for education, fiscal and monetary management, and income maintenance, but it cannot be regarded as synonymous with any one of them. (p.51)

As an important source of skill training in this country, vocational education should have a greater influence on the formulation of manpower policy than it has to date. Vocational education is a dominant factor in the supply of labor. According to some economists (see Wachter, 1974), vocational education could also affect the demand for labor. Furthermore, it could have some bearing on these two labor market forces. Yet, until recently, there was little coordination between the formulation and implementation of national manpower policy and vocational education policy. One of the primary objectives of the Education Amendments of 1976 was to remedy the lack of coordination between vocational education and other delivery systems for training programs. The 1976 amendments were intended to foster a more coordinated approach to program planning for the delivery of educational and training services at the state and local levels. According to key congressional staff, the intent of the legislation was to improve coordination among the major deliverers of educational and training services, including public vocational education, CETA prime sponsors, and other public training institutions (Sum et al., 1977). Two important features of this aspect of the legislation were determination of common data needs among states and review of other staff plans. Similar coordination of state and regional efforts for economic development will soften, to a considerable degree, the criticism that education and training do not prepare youth for today's jobs (White House Conference, 1978).

Occupational Projections

Occupational projections are critical factors in determining needs for vocational education programs. According to the 1976 legislation, the purpose of vocational education is training and retraining designed to prepare individuals for gainful employment as semi-skilled or skilled workers or technicians or subprofessionals in recognized occupations and in new and emerging occupations. In accordance with this definition, needs assessment in vocational education can be interpreted as discrepancy analysis of the difference between anticipated manpower demand and manpower supply. This discrepancy to a certain degree determines the number and mix of new businesses and industries that could be promoted in a region without unduly stretching the labor supply to existing businesses and industries.

Over the past few years, a number of models have been developed to determine and project manpower demand and supply. Kidder (1972) and Stevens (1976) have reviewed these models and classified them according to scope and approach. In spite of the number of manpower projection models available, the need for employment projection data is still urgent. According to Wirtz (1975), "The projections of future needs remain seriously inadequate, especially with respect to local (as compared with nationwide) employment prospects" (p. 5). Similar opinions have also been expressed by members of the National Advisory Council on Vocational Education and state and local administrators.

One of the most promising programs designed to provide occupational employment data for vocational education program planning is the Occupational Employment Survey (OES). The Occupational Employment Survey is a cooperative effort between the Employment and Training Administration of the U.S. Deptment of Labor and state employment security offices. Data are collected from non-agricultural employers by means of mailed questionnaires. These data, which are collected in a three-year cycle, are compiled to develop occupational profiles of various industries, thereby providing an estimate of current employment in more than 2,000 individual occupations (Dempsey, 1976).

The industry-occupational employment matrix developed by the Bureau of Labor Statistics (BLS) is an econometric technique used to forecast occupational employment. The present national matrix shows employment in about 420 specific occupational categories cross-classified by 201 industrial sectors and six class-of-worker categories. Industry employment data collected through the OES survey are used as input to the matrix to forecast occupational employment for a target year. In 1972 work was begun on a national-state matrix so that occupational employment could be projected for the states as well as for selected sub-state regions.

Although the BLS model promises to provide occupational data for vocational educational planning, it has weaknesses which tend to limit the utilization of forecast data. One problem common to all such forecasting techniques is that of accurately forecasting the level of economic activity, both in the aggregate and by sector (Hollister, 1976). The efforts of federal and state governments to intervene in order to decrease unemployment through increased subsidies and creation of emergency jobs exemplify hazards involved in predicting economic activity. Another problem involved in the prediction of economic activity relates to increased competition among states and sub-state regions for industrial and economic growth through promotion, subsidies, tax exemptions, and similar economic stimuli (Young et al., 1972). When these activities do not follow overall national economic trends, predictions of economic activity at the state and sub-state regional level are particularly hazardous.

A second problem involved in using the BLS matrix to project occupational employment relates to changes in technology. The problem lies in accurately predicting the rate and the quality of change in existing technology which would affect not only the employment profile of different industrial sectors but productivity as well. In addition to anticipating the rate of technological change, forecasters must also anticipate the effect that the supply of labor will have on the quantity of labor actually utilized. Because of the "substitution effect" (substitution of capital inputs for labor inputs), inaccuracies inherent in forecasting or anticipating technological changes and their effects on productivity may tend to render the projections of occupational employment subject to considerable error.

The third problem with the BLS model relates to the lack of specificity for local use. Under the OES program, the BLS matrix is being used to forecast occupational employment for states, SMSA's with populations of 250,000, and selected county groupings meeting the same population criterion (Dempsey, 1976). These projections fall short of the expectations of vocational educators because the school districts, the basic building blocks of the planning process, are generally political divisions rather than labor market entities. Thus, even after the extension of the current BLS model, the occupational data will be of limited use to local planners of vocational education.

Another school of thought considers academic the argument concerning the "specificity" and the "level of accuracy" of occupational employment data. According to these economists, vocational education planners cannot relate to changes in the labor market because of the inertia caused by existing investments in physical plants, professional staff, and the self-interest of vocational educators. Stevens (1976) states this argument in the following terms:

> There is a need to eschew reliance on beliefs in inherent good intentions, to end repetitive appeals for improved communications, and to halt the stream of recommendations to collect more or better information on this and that aspect of our lives. The actors behave as they do because it is in their self-interest to do so, given the institutional context in which they operate. Given the rules of the game, everyone plays to win. There are information imperfections which result in educational outcomes which most of us would agree are undesirable. But some participants prefer the present situation because they are benefiting from it relative to perceived alternative circumstances. And these actors will attempt to maintain the status quo. (p.36)

Stevens concludes that vocational educators, in order to retain their discretion in deciding whether to accept or reject the available occupational employment projections, have consistently failed to define the limits on the accuracy of such projections.

An increasing number of agencies are involved in employment projections, and there are some important new developments. For example, the National Occupational Information Coordinating Committee (NOICC) is completing regulations to administer the 1976 vocational education amendments. The U. S. Department of Labor is completing a handbook of occupational key words. The National Center for Education Statistics is preparing guidelines for a minimum data set for educational reporting purposes. The Bureau of Labor Statistics continues to refine its methods and data through the Occupational Employment Statistics (OES) program and the Unemployment Insurance Data Base Project, among others.

According to Stevens (in Braden, 1977), there are several points to be aware of when consideration is given to occupational projections. They are:

1. There has been a general failure to decide what level of employment projection accuracy is required.

2. Skill and occupation are frequently treated alike.

3. For very stable employment sectors, depending upon the precision of projection needed, "old" data may be quite satisfactory.

4. Projection of manpower requirements is a technological exercise, not an economic understanding. There is no explicit consideration of the interaction of supply and demand forces, and no statement of the behavioral responses of the economic actors; or, if such forces are considered, they are assumed to exhibit zero or near zero influence.

5. The rate-of-return approach produces no target number of people to be trained in various skills to equate their rates of return.

6. Institutional training settings cannot replicate joint on-the-job training/production peculiarities which are associated with unique equipment and production process characteristics, informal team accommodations, and communication idiosyncrasies.

7. On-the-job training settings may be characterized by an incumbent's unwillingness to train fully-qualified competitors if they are seen as a threat to the job security and/or earnings potential of the incumbents. (pp.310-312)

Paul (1976) has also pointed out that manpower projections should reflect local economic and industrial development plans and goals. This is one way to make manpower projections relevant and useful for local and state vocational education planning. Others who have made contributions to the subject of the use of manpower projections are Braden (1977) and Kelly et al. (1975).

Vocational Education and Employment

One of the primary objectives of economic development is increasing employment within a state or region. It has already been noted that industrial development promises and entails training of the work force in new occupations geared to the specific needs of employers. This makes it economically feasible for employers to create more jobs. For residents it means more and higher paying jobs. Better quality jobs require more vocational education.

A well-trained work force, along with other economic factors, draws industries to an area. A well-organized vocational program promotes economic development through recruitment of new industries. Vocational education thus should be promoted even when there is no immediate prospect of industrial activity.

Vocational education is sometimes criticized for its rigidity in responding to labor market realities and the world of work. Pressley and McGraw (1978), while justifying classroom training as part of a CETA program, voice their criticism in the following terms:

> Traditional educational preparation was found noticeably lacking on two counts. First, there was a lack of linkages between public school, college, and university classrooms and the real world of work. Because they could not obtain adequately trained new personnel from traditional education programs, business and industry became increasingly involved in the training process.... Second, a substantial segment of those who entered the traditional education system were not reached by its efforts for one reason or another. In large part, those unreachables came from the ranks of the poor, most often from minority ethnic groups. They comprised a social subgroup called "the disadvantaged." (p.1)

Although the above criticism is primarily aimed at traditional academic education, vocational education shares part of that criticism. In light of recent developments in such states as Oklahoma, Texas, and Tennessee where vocational programs are being geared more closely to employer needs, such criticism seems harsh. Assessment of employer needs and identification of barriers to employment of youth and adults on a continuing basis seem to be gaining acceptance among vocational educators. If these programs are expanded, vocational education should be able to provide better service to the disadvantaged, the handicapped, and the poor. Programs such as Relating Training to Occupational Needs (RETONE) in Tennessee (Paul et al., 1979), should be helpful in achieving this objective.

The RETONE project is designed to improve the congruence of vocational education programs with current job practices in the middle Tennessee area. Under this project, data were collected from employers to assess their needs in terms of workers' skills and attitudes. At the same time career aspirations, skill training, and work attitudes of vocational students were assessed to find a match with the employers' needs. Analysis of gaps between employer expectations and student aspirations is designed to help guidance, counseling and skill training programs. Strengthening communications between employers and vocational educators is an important feature of the RETONE system.

Youth unemployment in the United States has been the cause of national concern in recent years. The gross facts are well known: 16-to 24-year-olds constitute just under 25 percent of the labor force but close to 50 percent of all unemployed persons and minority teenagers have an unemployment rate of approximately 40 percent, three times that of white youth (DeLone, 1978). The problem of urban economic development cannot be separated from the issue of increased youth employment. Some would argue that improvements in the educational system and its linkages to the world of work are the critical variables in combating youth unemployment. It has been observed that during the last recession, other countries had more youth employment programs and depended less on public service employment than did the United States. An important feature of programs in other countries was to encourage training and employment or a combination of both (Reubens, 1977).

Wirtz (1975), Swanson (1978) and some other educators and economists have advocated using vocational education as a "holding tank" during recessions and similar high unemployment periods. Wirtz points out that:

> Recession plainly is a time of national crisis. But it is also a time when the cost of educational reversal is at its lowest, when income support programs are already paying out money, and when whatever additional government expenditure is necessary is entering the economy when it is most needed. The propositions have been well-recognized in Sweden and put into practice in the form of a counter-cyclical education and training policy. (p. 118)

A similar theme is expressed by Rehn (1974) when he recommends the policy of income maintenance and transfer arrangements as public policy to combat the inflation-unemployment dilemma. This would allow the supply of labor to vary in response to market demand without affecting the individual's flow of income. The leisure time forced by cyclical changes in the labor market should be used for useful education and training. According to Law and Greenwood (1977), vocational education has been proven to be an appropriate vehicle to effect the economic function of youth and adult employment. They suggest further critical analysis of the economic role of vocational education.

Vocational Education and the Private Sector

An issue closely associated with the subject of employment is the relationship between vocational education and the private sector. There are countless examples of private sector involvement in school-related career development and employment programs ranging from career exploration to vocational school cooperative programs. The evidence of effectiveness of such efforts is mixed at best, but the faith of employers in the elixir of schooling remains substantial (DeLone, 1978). Yet, many employers and employer organizations complain that vocational education programs remain insensitive to private-sector concerns, a fact which is manifest in the lack of attention to planning and phasing of programs.

Only recently have serious efforts been made to assess employer needs in developing vocational education programs. Since the 1968 vocational education legislation, numerous information systems have been developed, tested, and implemented to assist the planning of vocational education programs. One common feature of almost all such systems is the assessment of current and future demand defined as worker requirements. Whereas the method of arriving at manpower demand figures may vary from system to system, or from state to state, all information systems are concerned with the needs of employers and with planning program offerings to meet those needs.

At the same time, industries and businesses are becoming more concerned with human resource development. There is renewed interest in better job environments, job satisfaction, job restructuring, training and retraining, and better use of leisure time. Employers are finding that investment in human resources pays dividends in terms of a more productive work force (Mills, 1975).

Vocational education has the potential to become more involved in human resource development. It needs to be involved in retraining programs and training in better use of leisure time. Currently, however, efforts are mostly concentrated on training youths and adults for entry-level jobs. In the United States, where jobs become obsolete in an average of eight years, and where the average worker changes his occupation at least twice in a working life, retraining becomes essential. At present, almost all retraining is done by industry. With a shift in vocational education policy, this could change. A closer linkage between employers and vocational education could result in a team effort where vocational education provides classroom training and industry provides on-the-job experience. Vocational education also needs to develop lasting relationships with the labor union movement. Vocational educators have not yet been able to tap the vast resource represented by labor unions.

Vocational Education and Productivity

Productivity of the work force is an area of important economic activity. The effects of education on productivity are difficult to measure accurately. Bolino (1972) has identified formal education as one of 23 factors that affect economic growth. Informal education and on-the-job training could not be included because their effect on economic growth could not be estimated. Other problems in assessing the effect of education on productivity include weighing of factors, lack of adequate data, and inadequacy of measures. Bolino has found that any method of assessing the effect of education on productivity which is based on purely academic education must understate the role of education in economic growth. He has suggested that occupational training should be included in the definition of education while making estimates of economic growth factors. Denison (1964) in an earlier study admitted that his estimate of the contribution of education to economic growth was quite arbitrary. He stated:

> I know of no way to estimate directly the contribution of the advancement of knowledge in its application to the growth rate. This estimate is obtained as a residual. Like any residual, it picks up errors in all other estimates insofar as these are not offsetting. In the present case, this is a grave limitation. (p. 229)

Other efforts at measuring the effects of vocational education on the labor market, on the participants, and on the community as a whole suffer from similar limitations. A national conference conducted by the National Center for Research in Vocational Education in August, 1978 highlighted this inadequacy. The objective of the conference was to discuss vocational education outcome measures, including job placement, job satisfaction, and noneconomic outcome measures (Darcy, et al. 1979).

Lewis (1977) discusses the role of individuals in productivity as follows:

> Recognizing and employing the conceptual framework of human capital opens the way for explaining past economic growth, planning the alteration of such growth in the future, and altering the distribution of productive abilities....(Labor productivity) may be modified by individual decision and public policy. Rational (i.e., efficient) decision making is not only desirable but possible within the educational sector. (p. 47)

Phillips (1977) expressed the opinion that there has been a tendency in discussing productivity to overlook the resourcefulness and initiative of individuals in the American workplace. He states:

> There is evidence that we are re-discovering, perhaps out of necessity, those human resources. In searching for ways to improve economic performance, there is a growing attention to new organizational structures and new roles for the men and women who work in America's companies and work places. (p.2)

Since productivity involves workers, their capabilities, their value systems, their sensitivities, and their aspirations, vocational education through training and retraining programs, and through guidance and counseling services, should be in a good position to affect the productivity of our labor force.

The average American worker, with over twelve years of schooling, is one of the best educated in the world. There is some argument, in fact, that the work force is over-educated. A recent Bureau of Labor Statistics study reports that between 1976 and 1985 there will be 2.7 million college graduates who will be forced into below college-level positions. There will be 10.4 million graduates competing for 7.7 million jobs traditionally requiring college degrees. Any future educational policy should be directed towards targeting education to the realities of the job market. As Dixon has stated:

> The educational system of America must undergo marked change to respond to the future needs of the economy.... Current federally financed employment programs must require training to develop competency as a part of the opportunity to work. Temporary work, void of future-oriented direction, can only serve to reinforce the hopelessness and the despair that characterize the unemployed of this Nation. (White House Conference, 1978, p. 16)

By improving the training level of the work force and by providing a variety of flexible opportunities for retraining, vocational educators can play a significant role in increasing the productivity level of American labor.

CONCLUSIONS

A well-coordinated economic development effort at the local or state level includes adequate training facilities geared to specific needs of employers. In southern states, industrial training programs conducted by vocational institutions have demonstrated the potential for attracting new and expanding industries. In many states, notably Oklahoma, North Carolina, South Carolina, and Tennessee, the relationship between industrial developers and vocational educators has resulted in economic expansion. Similar efforts are underway in other states.

Improving the productivity of American workers is becoming important for our economic survival. Vocational education, by improving training programs and by providing training to marginally productive workers, could make a difference in the productivity level of the work force.

One important objective of economic development is more jobs. Training alone will not result in increased employment. Vocational educators need to assess employer needs which translate directly into employment opportunities. Vocational education thus has the potential to play a more significant role in the nation's economic growth and development.

Concern for vocational education is concern for the world of work. It is concern for the employer who hires vocational graduates and creates jobs to keep the economy prosperous. It is concern for experienced workers, for the youth who are at the threshold of promising careers, and for the new role of women who aspire to expanded opportunities in the workplace. It is concern for the economic well-being of the nation.

REFERENCES

Blaug, Mark. "The Correlation Between Education and Earnings: What Does It Signify?" Journal of Higher Education 1 (1972).

Bolino, August C. Occupational Education as a Source of Economic Growth. Washington, DC: Catholic University of America, 1972.

Braden, Paul V. "Human Resource Information Systems for Regional Economic Development." In Human Resource and Regional Economic Development, edited by Paul V. Braden. Washington, DC: U.S. Department of Commerce, Economic Development Administration, 1977.

Carter, Jimmy. "Economic Recovery Program: The President's Message to the Congress Proposing a Two-Year Economic Recovery Package." Presicential Documents 13 (January 31, 1977).

Center for Political Research. Federal Activities Affecting Location. Washington, DC: Economic Development Administration, U.S. Department of Commerce, 1970.

Council on Environmental Quality, The Growth Shapers: The Land Use Impacts of Infrastructure Investments. Washington, DC: U.S. Government Printing Office, 1976.

Darcy, Robert L.; Bolland, Kathleen A.; and Farley, Joanne. Vocational Education Outcomes (Final Report on Year One of the R&D Project "Examining Vocational Education Outcomes and Their Correlates"). Columbus, OH: National Center for Research in Vocational Education, The Ohio State University, 1979.

DeLone, Richard H. "Youth Employment and the Private Sector." Paper presented at the National Commission on Manpower Policy Conference, October 19-20, 1978.

Dempsey, Richard. "The Bureau of Labor Statistics Employment Projections Program," In Occupational Employment Projections for Program Planning Purposes: Issues and Examples, edited by David W. Stevens. Columbia, MO: University of Missouri, January, 1976.

Denison, Edward F. The Residual Factor and Economic Growth. Paris: Organization of Economic Cooperation and Development, 1964.

Graham, Otis L. Toward A Planned Society: From Roosevelt to Nixon. New York: Oxford University Press, 1976

Hartley, David K. State Strategies for National Economic Policy. Washington, DC: The Council of State Planning Agencies, 1977.

Hollister, Robinson. A Technical Evaluation of the First Stage of the Mediterranean Regional Project. Paris, France: Organization for Economic Cooperation and Development, 1976.

Jusenius, Carol L., and Ledebur, Larry C. "Federal and Regional Responses to the Economic Decline of the Northern Industrial Tier." Challenge 6 (March-April, 1977).

Kelly, S.C., et al. Manpower Forecasting in the United States: An Evaluation of the State of the Art. Columbus, OH: Center for Human Resource Research, The Ohio State University, 1975.

Kidder, David E. Review and Snythesis of Research on Manpower Forecasting for Vocational-Technical Education. Columbus, OH: The Center for Vocational and Technical Education, The Ohio State University, February, 1972.

Law, Charles J. and Greenwood, Katy. "Toward Economic Goals and Objectives for Vocational Education." In Vocational Education and the Nation's Economy, edited by Warren G. Meyer. Washington, DC: American Vocational Association, 1977.

Ledebur, Larry C. "Regional Economic Development and Human Resources Requirements." In Human Resource and Regional Economic Development, edited by Paul V. Braden. Washington, DC: U.S. Department of Commerce, Economic Development Administration, 1977.

Lewis, Darrell R. "An Introduction to the Economies of Education." In Vocational Education and the Nation's Economy, edited by Warren G. Meyer. Washington, DC: American Vocational Association, 1977.

Massachusetts Office of State Planning. City and Town Centers: A Program for Growth. Boston: Massachusetts Office of State Planning, 1977.

Mills, Ted. "Human Resources--Why the New Concern." Harvard Business Review 53 (March-April, 1975): 121.

National Academy of Sciences. Knowledge and Policy in Manpower: A Study of the Manpower Research and Development Programs in the Department of Labor. Washington, DC: National Academy of Sciences, 1975.

Paul, Krishan K. Relating Jobs to Training: A Model to Improve Congruence of Vocational Education and Current Job Practices. Nashville, TN: The Urban Observatory, 1976.

Paul, Krishan K.; Holden, Linda B.; and Hatcher, L.C. Survey of Five Growth Occupations in Nashville SMSA. RETONE Phase I Report. Nashville, TN: The Urban Observatory, 1979.

Phillips, Lonis J. "Quality of Workship Life: Implication for Productivity" In Productivity, Human Resources, and Management Cooperation. Washington, DC: Economic Development Administration, U.S. Department of Commerce, 1977.

Pressley, Calvin, and McGraw, James. Classroom--Training--The OIC Approach: CETA Program Models. Washington, DC: U.S. Department of Labor, Employment and Training Administration, 1978.

Rehn, Gosta. "Towards Flexibility in Working Life." In Recurrent Education, edited by Selma J. Mushkin. Washington, DC: National Institute of Education, 1974.

Reubens, Beatrice G. "Lessons from Abroad on Employing Youth." Worklife, 2 (February, 1977).

Rhodes, James A. Alternative to a Decadent Society. Indianapolis: Howard W. Sams and Company, Inc., 1969.

Rodgers, Ronald C. Educational Planning in the Labor Market: Linking Occupational Education to Regional Economic Development, Volume One. Evanston, IL: Northwestern University, 1976.

Staley, E. Planning Occupational Education and Training for Development. New Delhi: Orient Longmans, 1970.

Stevens, David W. Employment Projections for Planning Vocational-Technical Education Curricula: Mission Impossible? Columbia, MO: University of Missouri, 1976.

Stevens, David W. "Employment Projection Methods and Applications in Planning Human Resources Development Programs." In Human Resource and Regional Economic Development, edited by Paul V. Braden. Washington, DC: U.S. Department of Commerce, Economic Development Administration, 1977.

Sum, Andrew M.; Sawhney, P. K.; and Hernstadt, Irwin. "Issues in the Development of a Comprehensive Occupational Information System for Planning Employment and Training Programs at the State and Local Level: Current Research Efforts Within the State of Massachusetts." Paper presented at the Fifth Annual New England Business and Economic Development Conference, Wakefield, MA, November 3-4, 1977.

Swanson, Gordon I. "Vocational Education: Fact and Fantasy." Phi Delta Kappan 60 (October, 1978).

Thurow, Lester. Generating Inequality Mechanism of Distribution in the U.S. Economy. New York: Basic Books, Inc., 1975.

Tuttle, Francis T., and Alexander, Arch B. "Vocational Education and Economic Development." In Human Resource and Regional Economic Development, edited by Paul V. Braden. Washington, DC: U.S. Department of Commerce, Economic Development Administration, 1977.

U.S. Congress, Senate Subcommittee on Economic Development of the Committee in Public Works. Extension of the Public Works and Economic Development Act of 1965 and Title V Regional Commissions. S. Rep. 2228, 94th Congress, 2nd Session. Washington, DC: Government Printing Office, 1976.

Wachter, Michael L. "Primary and Secondary Labor Markets: A Critique of the Dual Approach," Brookings Paper on Economic Activity, Volume 3. New York: Brookings Institute, 1974.

White House Conference on Balanced National Growth and Economic Development. Final Report: Volume 1, Summary of Conference Proceedings. Washington, DC: Government Printing Office, 1978.

Wilson, Leonard U. State Strategies for Multistate Organizations. Washington, DC: The Council of State Planning Agencies, 1977.

Wirtz, Willard. The Boundless Resource: A Prospectus for an Education - Work Policy. Washington, DC: The New Republic Book Company, Inc., 1975.

Young, Robert C., et al. Vocational Education Planning: Manpower Priorities and Dollars. Columbus, OH: The Center for Vocational and Technical Education, Ohio State University, 1972.